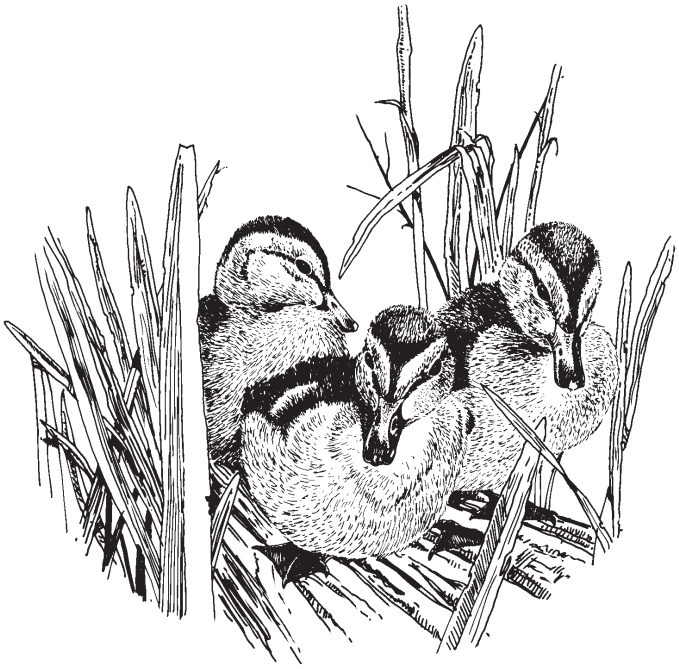
chapter 3



MANAGEMENT DIRECTION

Chapter 3. Management Direction

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans. The underlying foundation of the Refuge System is that "wildlife comes first" (Fulfilling the Promise, USFWS 1999). The refuge will be managed with this underlying principle at the forefront.

3.1 HABITATS

UPLAND HABITATS

Semi-desert Shrublands and Grasslands

Semi-desert shrublands and grasslands are typical of arid continental interior basins and is widespread in areas affected by rain shadows in western North America where mean annual precipitation is less than 10 inches. This habitat type is widespread on the valley floor, where only 7 inches of precipitation falls annually. Approximately 77 percent of the refuge, or over 71,700 acres, fall into this habitat type (figure 3) (CDOW 2004a). The dominate shrubs include rubber rabbitbrush (*Ericameria nauseosa*), greasewood (*Sacrobatus vermiculatus*), fourwing saltbush (*Atriplex canescens*), shadscale (*Atriplex confertifolia*), and winterfat (*Krascheninnikovia lanata*). Native grasses occurring in association with these and other shrubs typically include Indian ricegrass (*Oryzopsis hymenoides*), Alkali sacaton (*Sporobolus airoides*), western wheat grass (*Pascopyrum smithii*), and blue grama (*Bouleloua gracilis*). Annual plants tend to be more abundant in this habitat type; however, many of these are exotic species including cheat grass (*Bromus tectorum*). Crested wheatgrass (*Agropyron desertorum*), an exotic perennial grass, also may be common. Many of the plants within this habitat type are drought resistant and tolerant to a range of soil salinity, conditions common on the valley floor.

Blue grama

Bird diversity and densities tend to be relatively low in semi-desert shrublands due to structural and floristic simplicity (Wiens and Rotenberry 1981). Species common to this habitat include the horned lark (*Eremophilo alpestris*), mourning dove (Zenaida macroura), western meadowlark (*Surnella neglecta*), and loggerhead shrike (*Lanius ludovicianus*). Upland grassland habitats, depending on the amount and type of vegetation, have the potential to support rare grassland-

Table 2. Summary of Major Vegetation Classes within Baca National Wildlife Refuge.

Vegetation Class Name	*Grid Code*	*Acres*	*%*
Rabbitbrush Grass Mix	34	43,916	47.6
Greasewood	24	24,646	26.7
Herbaceous Riparian	112	9,009	9.8
Sedge	113	4,025	4.4
Grass Dominated	11	3,898	4.2
Shrub/Grass/Forb Mix	32	3,220	3.5
Cottonwood	106	1,703	1.8
Soil	93	794	0.9
Irrigated Agriculture	6	452	0.5
Sand Dune Complex	17	332	0.4
Total		91,995	99.5%

Note: Six other vegetation classes occur within Baca NWR with acreages (<100).

** Data from Colorado Vegetation Classification Project (www.ndis.nrel.colostate.edu).*

dependent species such as the burrowing owl (*Athene cunicularia*), mountain plover (*Charadrius montanus*), long-billed curlew (*Numenius americanus*) and several sparrow species. Another habitat type found in association with the playa wetlands portion of the shrublands are salt grass pans. These areas depending on the hydrologic conditions and juxtaposition to other habitat types, can support a range of invertebrate, mammal, and bird species including nesting American avocets (*Recurvirostra americana*). Two globally vulnerable subspecies of small mammals, the silky pocket mouse (*Perognathus flavus sanluisi*), and the thirteen-lined ground squirrel (*Spermophilus tridecemlineatus blanca*); and one globally vulnerable subspecies of butterfly (sandhills skipper; *Polites sabuleti ministigma*) were found in greasewood/salt grass dominated areas of the White Ranch (Rondeau et al. 1998). This subspecies of sandhill skipper is endemic to the San Luis Valley. Also, the globally rare slender spiderflower (*Cleome multicaulis*) can be found in the transition zone between the shrubland and salt grass pans.

Management of Shrublands and Grasslands

During the interim period, the Service will assess the condition of the shrublands and grasslands habitat on the refuge. Obvious signs of degradation, whether in vegetative condition or the presence of large infestations of invasive plants, will be addressed with corrective actions.

Following an assessment, strategies will be developed and implemented to improve this habitat type for wildlife. Lands within the refuge have a long history of domestic cattle grazing, some of which recently, at least on the Baca Ranch, has been a season-long grazing scheme with high stocking rates. The Service considers domestic grazing as a management tool to improve habitat quality for wildlife. As more information is gathered about this habitat type and its condition, specific habitat-based goals and objectives will be developed. Domestic grazing activities within the shrublands and grasslands habitat on the refuge will be reduced over time; the degree and timeliness of changes will be dependent on, at least initially, the condition of the habitat, and later based on specific habitat-based goals and objectives for this habitat type.

The Service will consider the use of prescribed fire in this habitat type, especially in areas with a larger grassland component, to improve or provide a matrix of various habitat types for wildlife. The Service has been an active partner in the development of a joint Greater Sand Dunes Fire Management Plan planning effort with the NPS and TNC, and will use this effort as the basis for further fire management planning for the refuge. This interagency effort will provide a general framework for fire-related actions to enhance and maintain wildlife habitat, biological diversity, healthy ecosystems, and cultural resources, while reducing the chance of a catastrophic wildfire. Prior to the use of prescribed fire on the refuge, fire management specialists will write site-specific burn plans tied to habitat management objectives. These site-specific plans will encompass all aspects of the prescribed fire planning process and must receive approval from regional fire management staff in Denver prior to implementation.

USFWS/John and Karen Hollingsworth

Western meadowlark

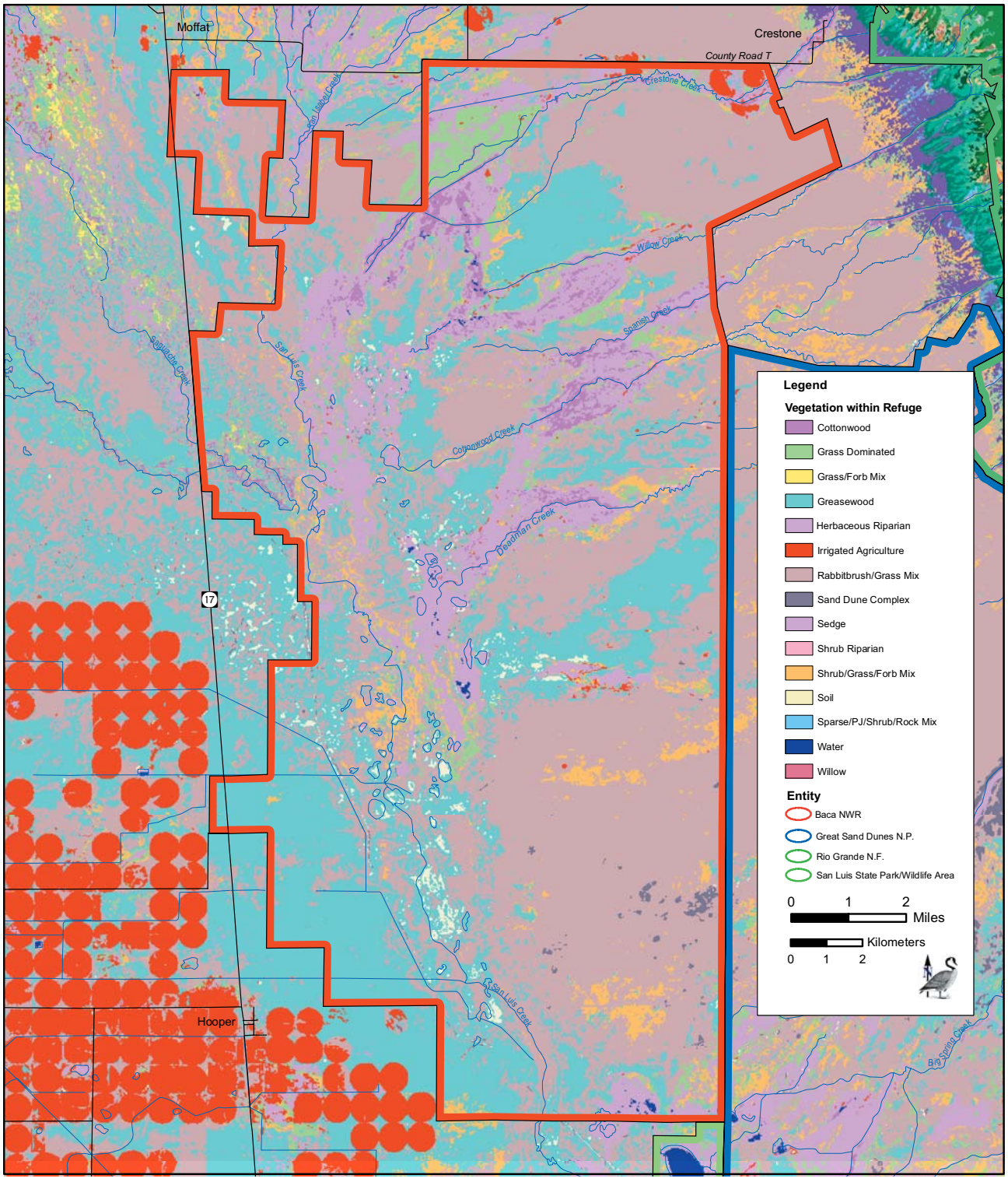
Figure 3. Vegetation Map

U.S. Fish & Wildlife Service

Baca National Wildlife Refuge

Saguache and Alamosa Counties, Colorado

Vegetation Map
Figure 3



WETLAND HABITATS

Protection of water resources in the Great Sand Dunes ecosystem was one of the primary driving forces behind the legislation establishing the refuge. The refuge contains a diversity of wetland types, each possessing unique hydrologic characteristics and each supporting a diversity of plant and animal species, some of which are very rare (e.g., slender spiderflower). According to the National Wetland Inventory (NWI), approximately 14 percent (13,112 acres) of the refuge has been classified as wetlands (table 3; figure 4). Wetland type, which is directly affected by water permanence and other abiotic factors, varies greatly within the refuge. Intermittent wetlands (or "playa wetlands") can experience weeks, months, or even years between periods of inundation (see appendix B for NWI definitions). Temporary wetlands tend to have surface water for brief periods early in the growing season, while seasonal wetlands typically have surface water for most of the growing season. The vast majority of temporary and seasonal wetlands are referred to locally as "wet meadows."

Semipermanent wetlands and lakes usually have surface water that persists throughout the growing season and often beyond during most years. These wetlands are far less common on the refuge, yet, where they do occur, they provide important habitat for water birds such as the white-faced ibis (*Plegadis chihi*), eared grebe (*Podiceps nigricollis*), pied-billed grebe (*Podilymbus podiceps*), and sandhill crane (*Grus canadensis*).

This range of water permanence contributes greatly to the biological value of the refuge. Many of the wetland and riparian habitats on the refuge have been identified as conservation sites by the Colorado Natural Heritage Program (CNHP) because they provide "significant" or "very significant" contributions to global biological diversity (Rondeau et al. 1998). For example, creeks and wetlands on the Baca Ranch support the globally rare Rio Grande chub (*Gila pandora*) (Blenden, pers. comm. 2004; Rondeau et al. 1998). Wet meadows and playa wetlands, which comprise the largest component of wetland habitats on the refuge, are discussed in-depth in the following sections.

Wet Meadows

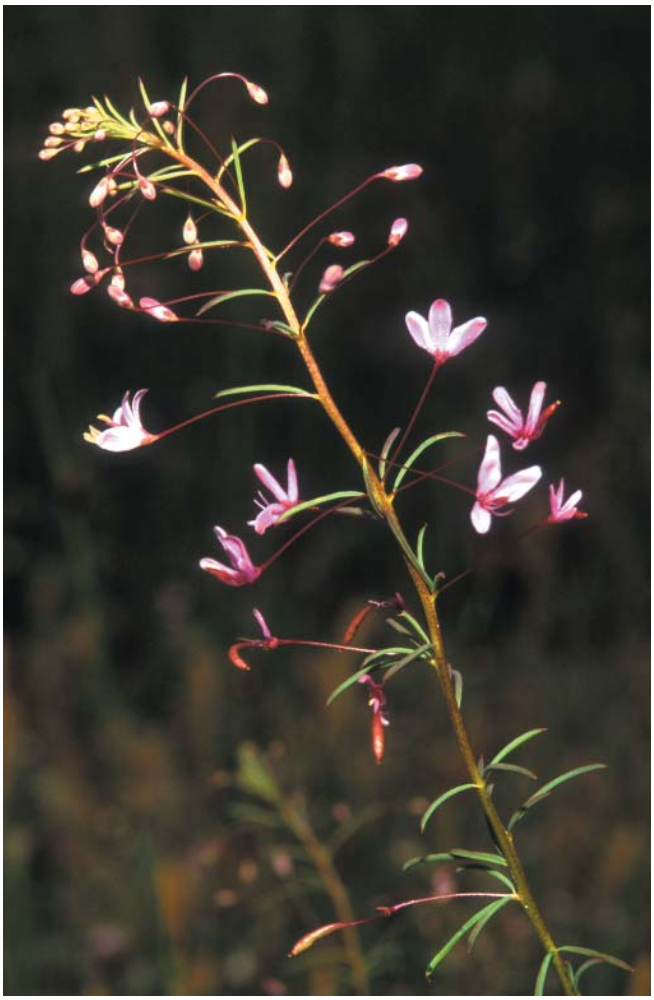
Wet meadows (the majority being temporary and seasonal wetlands) comprise the largest wetland type on the refuge covering over 10,000 acres (table 3). The wet meadows on the refuge tend to be dominated by sedges (*Carex* spp.), baltic rush (*Juncus balticus*), and hairgrass (*Deschampsia cespitosa*) plant communities. These communities are common in the northern portion of the San Luis Valley and occupy more area than all other wetland types in the valley (Cooper and Severn 1992). These communities tend to occur where the water table just reaches the soil surface during the early part of the growing season or inundates the surface for short periods. Wet meadows occur predominately in the central and northeast portion of the refuge along all of the creeks, and to a lesser extent in the southeast portion of the refuge along Sand Creek and Big Spring Creek.

Depending on plant structure and density, and water depth and duration, wet meadows offer tremendous foraging and nesting opportunities for a variety of wetland avian species including numerous species of waterfowl, the sora (*Porzana carolina*) and Virginia rail (*Rallus limicola*), white-faced ibis, American avocet, Wilson's snipe (*Gallinago delicata*), and Wilson's phalarope (*Phalaropus tricolor*). Wet meadows also provide critical roosting and foraging areas for a segment of the Rocky Mountain population of greater sandhill cranes, which migrate through the valley in the spring and fall. Wet meadows provide habitat for a variety of rare or unique amphibian species such as northern leopard frog (*Rana pipiens*) and Plains spadefoot toad (*Scaphiopus bombifrons*).

Table 3. Summary of Wetlands on the Baca National Wildlife Refuge

Wetland Type	*Total Wetland Acres*	*% of Refuge Area*
Intermittent	2,067	2.2
Temporary	8,426	8.7
Seasonal	2,253	2.4
Semi-permanent	172	<1.0
Lake	183	<1.0
Total	13,112	14.1

[1]*See Appendix B for NWI code definitions*



Slender spiderflower

In the transition areas between the wet meadows and the adjacent salt grass/greasewood uplands, the globally rare slender spiderflower thrives in the moist, slightly saline conditions (Rondeau et al. 1998). Although once widespread in the southern Rocky Mountains, this species now occur almost exclusively in the San Luis Valley. Significant populations of this rare plant are known to occur on the refuge.

Management of Wet Meadows

The extent of the wet meadows is largely tied to how water has been managed on the refuge over the last 100 years. Historical irrigation practices have created, to a large extent, these wetland plant communities. Wet meadows on the refuge are irrigated using a relatively simple set of diversion structures and ditches diverting from all of the creeks crossing the refuge. In addition to the creeks, several wells are also used for irrigation. Irrigation generally begins in late spring with the onset of increased flows from melting snow and continues into the summer. Flow into individual wet meadows is manipulated at specific times allowing the meadows to dry for hay harvest in late summer. At the completion of the irrigation season, excess water is typically diverted into pastures. West of the meadows, surface flows are greatly reduced or nonexistent as water percolates into the ground or is lost to evaporation. During the last 10 years, drought and the deterioration of irrigation infrastructure has decreased the quantity of water reaching the wetlands located along Saguache Creek and San Luis Creek, west of the wet meadows.

Management of the wet meadows is of great interest to water users of the San Luis Valley. The Great Sand Dunes Park and Preserve Act requires the Secretary of Interior, in administering water resources for the national wildlife refuge, to "minimize, to the extent consistent with the protection of national wildlife refuge resources, adverse impacts on other water users." Current understanding of hydrology on the refuge considers these wet meadows and the historic irrigation practices that have maintained them, as important sources of recharge for the Closed Basin Project and its associated water right. Although restoration of natural hydrologic conditions to the playa wetlands down stream of the wet meadows potentially has significant biological value, this objective has to be pursued with considerable caution and collaboration with other water users. The Service intends to work with all interested parties in the development of a comprehensive analysis of the hydrological characteristics in the vicinity of the Great Sand Dunes. One goal of this analysis will be to determine how alteration of the wet meadow irrigation regime impacts down stream users. This information will be useful in determining how, if at all, water can deliberately be used to irrigate other habitats that have historically been irrigated such as playa wetlands and their associated vegetation.

Traditionally, the wet meadows on the refuge have been hayed and grazed as part of the ranching operation. The Service views activities such as haying and grazing as tools used as part of an overall habitat management scheme to improve habitat quality for wildlife. The Service is concerned about the spread of invasive plants especially Canada thistle and tall whitetop, which are present in the wet meadows. These concerns will factor directly into decisions about current and future haying and grazing within the wet meadows. As knowledge increases related to overall condition of the wet meadows and wildlife use of these areas, and the location and severity of infestations, haying and grazing activities will be altered accordingly. The Service will also

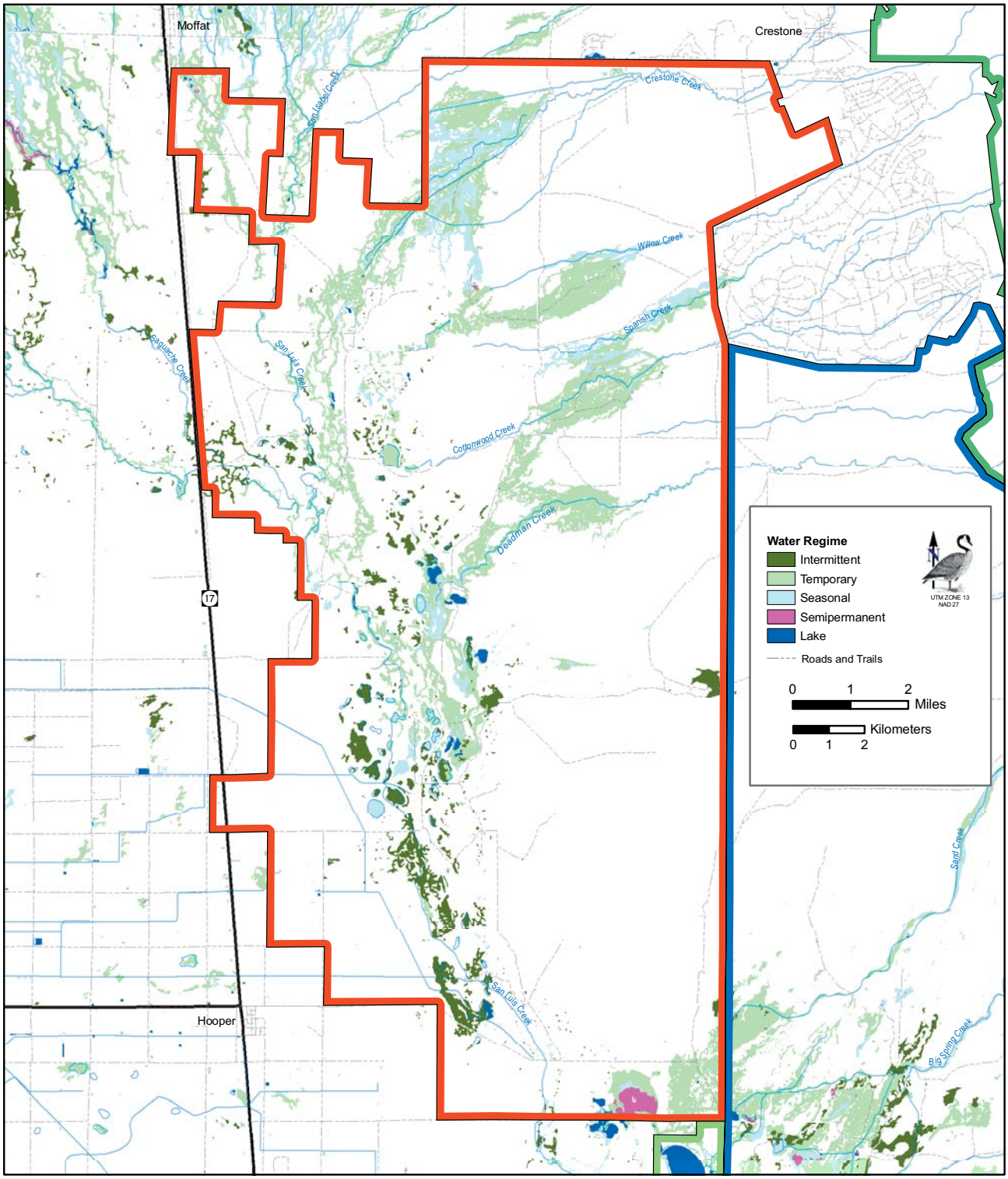
Figure 4. National Wetland Inventory Map

U.S. Fish & Wildlife Service

Baca National Wildlife Refuge

Saguache and Alamosa Counties, Colorado

National Wetland Inventory
Figure 4



consider the use of prescribed fire in this habitat type to improve or provide a matrix of various habitat types for wildlife (see management activities under "Semi-desert Shrublands and Grasslands" for more information on prescribe fire). As the refuge develops specific habitat goals and objectives for the wet meadows, the role of haying, grazing, and fire, will be more clearly defined.

Wet meadows and playa wetlands

Playa Wetlands

Playa wetlands on the refuge generally occur to the west of the wet meadows along Saguache and San Luis Creeks (figure 4). These wetlands have an intermittent or ephemeral water regime. In some cases, especially during years of below average precipitation, many of these wetlands remain dry. The ephemeral nature of these wetlands adds to their uniqueness and high productivity when water does return. During wet years, playas will fill during spring runoff and thunderstorms, and slowly dry up over summer. This drying and wetting cycle provides for the nutrient cycling conditions ideal for the production of invertebrates, a valuable food resource for numerous vertebrate species. During times of above average precipitation, these wetlands are some of the most productive wetlands in the valley (Cooper and Severn 1992). Greasewood and rabbitbrush with an understory of saltgrass (*Distichlis stricta*) and western wheat grass typically surround playa wetlands. As mentioned earlier, salt grass pans are an important habitat for several rare species of small mammals and a rare butterfly. Barren salt flats are also a component of playa wetland systems and can be important to foraging and nesting shorebirds.

Management of Playa Wetlands

Except in years of exceptional snow pack conditions in the Sangre de Cristo Mountains when water literally pours uncontrollably onto the valley floor, water management in the wet meadows directly affects how much, if any, surface water enters the playa wetlands. In recent history, very little surface water enters the playa wetlands. The Service recognizes the valuable contribution of functioning playa wetlands to the overall biological productivity and ecological richness of the region. At some point in the future, the Service, in coordination with partners, intends to evaluate different water management options within the wet meadows and measure their resultant effect on the playa wetlands. These options may include managing waters so there are at least some surface flows back to portions of playa wetlands. Please refer to the previous discussion of management activities, under "wet meadows" for more information.

RIPARIAN HABITATS

The refuge contains a variety of woody and non-woody riparian habitats along seven main creeks flowing from the Sangre de Cristo Mountains. These creeks (from north to south) are North Crestone, South Crestone, Willow, Spanish, Cottonwood, Deadman, and Sand Creeks. Riparian zones are the transition areas between aquatic and terrestrial habitats. In arid climates like that in the San Luis Valley, riparian zones typically compose a very small percentage of the overall landscape. However, they can contain some of the richest species diversity of any habitat type.

Riparian habitats with a tree and shrub component are located primarily along North Crestone and South Crestone Creeks (and associated irrigation ditches) in the north and northeastern portion of the refuge. Narrowleaf cottonwood (*Populus angustifolia*) is the dominant tree species with understory vegetation of willows (*Salix* spp.), red-oiser dogwood (*Cornus stolonifera*), and greasewood (figure 3) (CDOW 2004a). Healthy riparian vegetation plays a major role to stabilize and shade stream banks, thereby reducing sedimentation and providing quality habitat for aquatic species including the Rio Grande chub. Riparian vegetation along these creeks may provide habitat for the endangered southwestern willow flycatcher (*Empidonax trailii extimus*). This small songbird migrates and nests in dense willow and cottonwood areas throughout the San

Luis Valley, primarily at elevations below 8,500 feet, and may use similar habitat on the refuge.

Another riparian-obligate species, the yellow-billed cuckoo, which is a candidate species for federal listing under the Endangered Species Act, has been documented in dense, old-growth cottonwood forests on McIntire Springs (BLM) in the valley (Lucero, pers. comm. 2004). This species may also occur on the refuge, if the appropriate habitat type and structure exists. Riparian habitats also host a large number of migrating and nesting neotropical songbirds and raptors. In addition, several plant communities associated with riparian habitats of global importance have been identified by CNHP in close proximity to the refuge including rare examples of narrowleaf cottonwood/rocky mountain juniper (Populus angustifolia/*Juniperus scopulorum*) and aspen/rocky mountain maple (*Populus tremuloides*/*Acer glabrum*) (Rondeau et al. 1998).

The remainder of the riparian habitats along Willow, Spanish, Cottonwood, Deadman, and Sand Creeks are dominated by sedges and other herbaceous plant species. Historically, these creeks may have contained a larger component of woody species, such as willows, especially in the upper reaches within the refuge.

Management of Riparian Habitats

Similar to the other habitat types, the initial focus of management activities within the riparian habitats will be to evaluate the condition of the vegetation and identify areas of degradation and invasive species. Obvious signs of degradation, such as actively cutting or denuded streambanks, will be addressed as promptly as possible. Corrective actions may include realigning or adding additional fences, or removing cattle altogether from these riparian habitats. The Service will evaluate the riparian areas for presence of invasive plants such as salt cedar, Canada thistle, and tall whitetop and develop strategies to reduce their impact to native plants and wildlife. In addition, the process of gathering baseline wildlife-use information will be undertaken, especially related to possible use by southwestern willow flycatchers and yellow-billed cuckoos.

3.2 OPERATIONS, MAINTENANCE, AND LAW ENFORCEMENT

The refuge will be managed using existing staff based at Alamosa and Monte Vista refuges and any additional staff that are added to the refuge complex. Personnel needed to effectively administer operations and management include a refuge manager, biologist, administrative assistant, two maintenance workers, law enforcement officer, and two biological technicians.

The Service anticipates the interim refuge headquarters will be located at the Baca Ranch house on the north end of the refuge near the town of Crestone. This site will be evaluated as potential permanent headquarters location. From this location, daily activities and management operations will be conducted. If deemed necessary at a later date, location and construction of new buildings will be evaluated with input from the public. Inventory and maintenance of existing real property (e.g., buildings and infrastructure) will be conducted as personnel and funding allow. As lands are added to the refuge, appropriate boundary signs will be erected and maintained

Law enforcement is a critical component of the interim management of the refuge. The Service views protection of facilities, cultural and biological resources, and enforcement of refuge specific regulations as the highest priorities related to law enforcement activities. The Service has estimated that a minimum of 1.5 full time employees (FTE's) will be required to adequately address law enforcement issues on the refuge during the interim period. Indications gathered from public meetings, as well as from conversations with partners and the public, are that there is a widespread interest in general access onto the property, which has never been open to the public. The desire for access is primarily targeted toward cultural resources, hunting opportunities, and a general curiosity to what lies beyond fences that have essentially been off-limits for several generations.

The current law enforcement staff for the Refuge Complex consists of three dual-function officers. These officers currently spend 30 percent of their time addressing issues on Alamosa and Monte Vista refuges (approximately 0.7 to 0.9 FTEs). Law enforcement needs for Alamosa and Monte Vista refuges are approximately 1.25 to 1.5 FTEs (USFWS 2003). Partnerships with the Park, the CDOW, and the Saguache and Alamosa County Sheriffs Office are being pursued to address the shortfall. Given the lack of law enforcement resources within the Refuge Complex, the Service's ability to provide any kind of access or public use on the refuge as well as the ability to maintain current levels of public use and access on the Monte Vista and Alamosa refuges, likely will be impacted

3.3 PUBLIC USE

National wildlife refuges can provide a tremendous boost in revenue to local economies. A recent analysis of the economic impact of refuges estimated that 35.5 million people visited a national wildlife refuge in 2002 and spent over $800 million in regional

economies (Caudill and Henderson 2003). Within the San Luis Valley, Monte Vista and Alamosa National Wildlife Refuges continue to play a major role in the success of the Monte Vista Crane Festival, held annually during the sandhill crane spring migration (approximately 18,000 cranes). This event, held in March, attracts an estimated 10,000 visitors from all over Colorado and the nation to the San Luis Valley.

Providing wildlife-dependent opportunities to the public is one of the four guiding principles for the Refuge System. The Refuge Improvement Act of 1997 identified six priority public uses that receive special consideration above others on refuge lands. The six priority wildlife-dependent public uses are:

- Hunting
- Fishing
- Wildlife Observation
- Wildlife Photography
- Environmental Education
- Interpretation

Although these public uses have priority over others, new refuge lands are not inherently open to the public following acquisition. Unlike new lands acquired by other federal land management agencies, which are generally open until closed, lands added to the Refuge System are closed until opened to the public for a particular use.

The Compatibility Standard

Before activities or uses can be allowed on a national wildlife refuge, federal law requires that the uses formally determined "...compatible with the major purposes for which such areas were established..." (National Wildlife Refuge Recreation Act of 1966, as amended in Refuge Improvement Act of 1997). A compatible use is an allowed use that will not materially interfere with or detract from the purposes for which the unit was established (U.S. Fish and Wildlife Service Manual, 603 FW2.6B).

Existing Public Uses

Service policy requires the identification of all existing public uses that occur on lands under consideration for acquisition prior to transfer to the Service (Service Manual 603 FW 2.17A). Once existing public uses have been identified, an interim compatibility determination is made by the onsite refuge manager. Interim compatibility determination outlines which public uses will be allowed to continue if land is acquired by the Service. The interim compatibility determination

applies to the period between land acquisition and the completion of a CCP, or appropriate step-down management plan, in this case, a visitor services plan.

A review of existing public uses has revealed very limited access to the lands within the refuge acquisition boundary (table 4). The Baca Ranch lands, which comprise approximately 58 percent of the refuge (see figure 5), are presently closed to all public access. The SLB annually leases 13,105 acres of their land to the CDOW from September 1– February 28 for a limited dispersal elk hunt (cow elk only). The dispersal hunt is open to the public in that anyone can get on a list of potential hunters (Rivale, pers. comm. 2004). This hunt is administered on a need-only basis (when animals are accessible) and all hunters are accompanied by a CDOW representative.

The Service has recognized the CDOW dispersal hunt as an existing public hunting opportunity and has prepared an interim compatibility determination for this activity (see appendix C). This activity will be allowed to continue during the interim period from the time of acquisition until a hunting plan is developed for the refuge. At this time, general public access to the CDOW leased lands and to the remaining state lands is not allowed by the SLB.

The Hooper Pool facility is a private business currently open to the public for pool/spa activities. At this time, the Service has no intention of pursuing any land acquisition activities involving the Hooper Pool. At some point in the future, if the owners of this facility

Table 4. Interim Compatibility Determination Matrix

Wildlife Dependent Recreational Activity	*Existing Public Activity*	*Funds and Staff Available to Manage*	*Caompatibility for Interim Period*	*Interim Use Allowed*
Wildlife Observation	No	No	No	No
Wildlife Photography	No	No	No	No
Interpretation	No	No	No	No
Environmental Education	No	No	No	No
Hunting	Yes[1]	No[2]	Yes	Yes
Fishing	No	No	No	No

[1] Occurs only on State-owned lands.

[2] Currently, no funds or staff have been dedicated to refuge operations or management. Activity will be conducted with CDOW cooperation and assistance. See interim compatibility determination for details.

express interest in selling to the Service, the Service will review the feasibility of this parcel. If the parcel is feasible for inclusion into the refuge, a compatibility determination will be completed detailing how the facility would be or would not be operated. The remaining private lands within the refuge are not open to the public, including a portion of the Medano-Zapata Ranch, except by special arrangement (i.e., nature tour or workshop).

Future Public Use

Under the Refuge Recreation Act of 1962 (10 U.S.C. 460k), the Service may permit a public use on a national wildlife refuge only if that use is: (1) determined to be compatible with the purpose of the refuge; and (2) if sufficient resources are available for the development, operation, and maintenance of the permitted public use. It is the policy of the Service that when a proposed wildlife-dependent public use, especially a priority public use, is compatible with the refuge purpose, the activity should be facilitated. Whether sufficient resources are available to undertake a public use is determined based on sound professional judgment, with input from the affected public. The refuge manager must consider all aspects including financial, personnel, law enforcement, and infrastructure, among others, which currently exists or can be provided in some manner by the Service or its partners to properly manage a public use in a safe and effective manner.

The Service will consider all six priority uses for implementation on the Baca National Wildlife Refuge, and other uses as requested by the public. The Service intends to develop a visitor services plan that will address issues related to public access and wildlife-dependent activities on the refuge. This planning process will follow guidelines of the National Environmental Policy Act (NEPA) allowing for significant public input. Prior to an approved visitor services plan, public access to the refuge will likely be limited with greater access over time as resources and staff are increased, and as more information is assembled.

3.4 CULTURAL RESOURCES

The land within the refuge boundary and surrounding areas have long been regarded as important areas from a cultural and historic perspective. Some cultural sites date to almost 12,000 years ago. The protection of known culturally significant structures and sites will be a priority for refuge staff. The Service intends to coordinate with the NPS, TNC, and local law enforcement authorities to develop strategies to coordinate law enforcement activities to protect cultural resources.

Over time, the Service will evaluate and inventory additional areas within the Baca Refuge that have not been surveyed. The only area surveyed within the refuge has been the White Ranch property, which was surveyed in 1995 (Mabry et al. 1997). As a result of this effort, 64 new sites, two previously known sites, and 83 isolated occurrence sites were documented, many of which may be eligible for the National Register of Historic Places (Mabry et al. 1997). The Service will survey areas where disturbance to cultural sites, e.g., prescribed fire, may occur.

3.5 PARTNERSHIPS

Due to its sheer size and juxtaposition to other conservation entities, the refuge will play an important role in the protection and stability of the entire Great Sand Dunes ecosystem. The Service is committed to working with neighboring agencies, local groups, and individuals on issues related to the refuge and surrounding lands. The Service is excited about the opportunity to partner with others to better leverage scarce resources. Coordination and initial partnership efforts currently underway by Service representatives include:

- Participation in Great Sand Dunes Advisory Council meetings for NPS general management plan.
- Briefings with Alamosa and Saguache County commissioners.
- Interagency fire management plan (NPS, TNC, and the Service).
- State land exchange project (SLB, BLM, NPS, and the Service).
- Blanca Habitat Partnership Program.
- Joint vegetation mapping project (NPS, TNC, CNHP, USFS, the Service, and others).
- Interagency law enforcement activities.
- Baca National Wildlife Refuge conceptual management plan.

The Service will continue to keep members of other agencies and the public informed about issues at the refuge.